From: Dunham, Jason [jdunham@usgs.gov]
Sent: Wednesday, May 22, 2013 7:21 AM
To: Schumaker, Nathan
Cc: Penaluna, Brooke; Ebersole, Joe
Subject: Re: HEXSIM Fish

Hi Joe, Nathan, and Brooke -

I'd also be interested to learn more about HEXSIM and opportunities to adapt it to situations we are working on now. I've talked all-too-briefly about it with Kris M. and Chris J., but clearly need to learn a lot more before I have a working grasp of it. I know they are trying to model steelhead, but haven't heard much in the way of details in the past year or so.

From my quick review of the website and associated materials I do see some potentially very useful connections with the work we are doing to map coldwater patches in stream networks for bull trout and desert trout (primarily Lahontan cutthroat trout). This gives us the landscape geometry to model static patterns of presence (e.g., presence as a function of habitat size and connnectivity), but a model like HEXSIM could make things a lot more interesting by simulating dynamics under different assumptions about constraints on movement, and dynamics of the landscape itself (e.g., influences of fires, floods, droughts, climate).

So yes I'd be very interested as well to learn more about HEXSIM - I'm pretty much out of town until the week of 10 June so if there are times after that or on that week, let's meet at least briefly if that works.

Thanks!

On Tue, May 21, 2013 at 9:05 AM, Schumaker, Nathan <Schumaker.Nathan@epa.gov> wrote:
Hi Brooke,

Great connecting with you again, and thanks for the feedback on the website.

The aquatic population tools aren't discussed in any of my documentation yet because we haven't officially released any of that stuff. But the idea is that you'll develop a stream network (anywhere from small to huge) composed of connected reaches. Then users can assign any number of properties to each reach, and those properties can change through time. For example, you can assign measures for velocity, turbidity, temperature, etc. Then you can use these reach-specific attributes to modify movement rates, survival rates, and reproductive rates.

The reach network co-exists with the regular spatial data (an array of hexagons) and we have an event that can change hexagon properties based on reach properties, and visa-versa. This would allow beaver to improve fish habitat, etc. We also have interactions, so fish can eat each other, or compete, and so on. And most of the rest of the basic HexSim machinery is available to fish.

Two things you cannot do at this time are use HexSim genetics with fish, and our Simulation

Viewer (which produces animated movies of simulations) does not work with fish.

I'd definitely like to get together and talk more about IBMs and what comes after graduation. I'll be around except for the last 2 weeks of July.

Nathan Schumaker
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From: Penaluna, Brooke [Brooke.Penaluna@oregonstate.edu]
Sent: Tuesday, May 21, 2013 6:47 AM
To: Ebersole, Joe; Dunham, Jason
Cc: Schumaker, Nathan
Subject: RE: HEXSIM Fish

Hi Nathan,

Thanks for connecting us, Joe. Us, IBMers, we have to stick together. ;)

Your Hexsim website looks great! One question that I had looking at it, is how much relationship is their with an actual field site? You say that it is spatially-explicit, but maybe you could explain what field data could be collected to parameterize the model to the field. As I have understood it before it seems to depend on how the model is built as to what it is included each application, how it is calibrated, etc.

I am interested in further conversations about IBMs and I will be around Corvallis after I graduate this summer so I can meet and talk anytime. Would you like to?

Cheers,
Brooke

From: Ebersole, Joe [Ebersole.Joe@epa.gov]
Sent: Monday, May 20, 2013 12:01 PM
To: Penaluna, Brooke; Dunham, Jason
Cc: Schumaker, Nathan
Subject: HEXSIM Fish

Hi Brooke and Jason,

Given your interest in IBMs, you have no doubt heard about Nathan Schumaker's HEXSIM models. http://www.hexsim.net/index.html

Nathan is getting HEXSIM for fish in stream networks up and running, but there's still lots of room left for modifications, adaptations, etc. He's looking for folks who might be interested in checking it out, and I

immediately thought of you two. I could imagine there being some great opportunities to apply various datasets and questions to this modeling approach.

If either of you might be interested in exploring this more, Nathan's email is cc'd above. His phone number is: 754-4658. Please feel free to contact him if you'd be interested in learning more.

Cheers,
Joe

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